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GEOGRAPHICAL RECORD.

NORTH AMERICA.

CLIMATE AND THE DEVELOPMENT OF CANADA.—In a recent article on "The Railway Development of Canada" (*Scot. Geogr. Mag.*, May, 1909), the author, Dr. George R. Parkin, makes some striking allusions to the important part which climate has played in the development of the railway systems of that country, and to the control which climate will have over the future population. The magnificent waterways of Canada, with the improvements that have been made by the construction of connecting canals, are prevented by the severe cold from serving as highways of travel and transportation during the winter months. For this reason, largely, there has come the remarkable railroad development of the last fifty years. As the author well says:

"For local transportation, as in many other respects, Canadian snows and frosts are among the greatest advantages that the country possesses, but for transcontinental traffic by water they interpose for long periods an insuperable barrier."

Dr. Parkin also points out very clearly that the winter climate of Canada is perhaps the most valuable asset that the country can have, or that any country can have. The severity of the climate, except on a small part of the Pacific coast, eliminates the negro question, "which weighs like a troublesome nightmare upon the civilization of the United States, which shadows the future of South Africa, and gives many anxieties even to Australia." The cold keeps away the peoples from Southern Europe, who do not readily assimilate with the Anglo-Saxon stock, and attracts the hardier emigrants from Northern Europe. The strength of the best races of Europe is thus secured. The severe winter cold develops energy, prudence and foresight. If a man lacks these, he cannot survive: he must either go away to the warmer south, or he dies, if he has made no preparation for protecting himself. "So he must choose between a bracing-up of character, or flight, or death." Thus the race will be kept strong and homogeneous. Climate will tell. R. DEC. W.

SOUTH AMERICA.

THE TRANS-ANDEAN RAILROAD.—The great enterprise by which Chile and Argentina are to be connected by railroad is approaching completion. The *London Times* (Weekly edition, No. 1687,) says that the time now arranged for the opening is June, 1910, which is 11 months earlier than the time announced at the last annual meeting of the Argentine Transandine R.R. Co.

This engineering feat will rank among the most remarkable achievements. It will be the first transcontinental railroad line across South America from the Atlantic and one of the four rail outlets by which Chile, separated by the Cordilleras from most of her sister republics, will be able to communicate freely with other countries. The Antofagasta and Bolivia R.R. was the first step taken towards this end; the second is the transcontinental enterprise now approaching completion; a third will be another crossing of the Andes at one of the low passes above

Copiapo, to connect with the Argentine lines from Tucuman and with the Bolivian system; and the fourth will be the Arica-La Paz R.R., whose building has begun this year.

Natural obstacles and other difficulties continually intervened in the construction of the Argentine section of the transcontinental line between Mendoza and Uspallata, in the Andes. Many engineers considered the further progress of the road as unlikely though not impossible. The construction work in many places in the Andes has been of a very heavy nature, requiring elaborate cuttings both in gravel and rock and extensive defences to protect the line against river floods. The most serious engineering work on the Argentine side was in the part of the route leading up to La Cumbre Pass, 12,603 feet above the sea, where the mountains were pierced by a series of difficult tunnels. The Abt system of cogs and racks is employed for the safe and expeditious movement of trains.

On the Chilean side of the Andes the construction of the line has proved hardly less difficult and quite as costly. Between Rio Blanco and Juncal are three avalanche sheds to protect trains from the enormous masses of snow which collect on the mountain sides and are often precipitated upon the line. The first section, between Los Andes and Juncal, 32 miles, was opened for traffic on Feb. 12, 1906; the second section, between Juncal and Portillo, in an exceedingly wild and difficult district, was opened in June, 1908, well within the specified time; the third section, from Portillo to the junction with the Argentine line, soon to be completed, has a tunnel, 9,940 feet long, a very difficult piece of construction.

POLAR.

LIEUT. SHACKLETON'S EXPEDITION.—Some interesting detais of the scientific achievements of the British Antarctic expedition are reproduced in *Nature* (No. 2065) from the *London Times.* They are based upon information supplied by Prof. Edgeworth David. A number of the rotifers found in the lake muds were of the same variety as those already described by the biologist of the expedition (Murray) in Spitzbergen and Franz Joseph Land. A point of special interest in regard to the marine fauna near Cape Royds is that it may provisionally be concluded that it bears some distant resemblance to the types of animal life of the Coal-measure series of Australia and Tasmania. The possibilities of the Antarctic having been an archipelago can no longer be entertained. There is a high continental plateau extending from the new mountains recently discovered by the *Nimrod* expedition, forty-five miles west of Cape North, to the magnetic pole, and then across the plateau traversed by Captain Scott of the *Discovery,* and over the portion traversed by Lieut. Shackleton in his furthest south journey, to beyond the South Pole itself—probably a distance of 1,800 miles. The most interesting geological discovery was that of Coal-measures at least 1,500 feet thick in latitude 85° S. There were at least seven seams of outcrop in the cliff face of the great nunatak where the discovery was made; they varied in thickness from 1 foot to 7 feet. Abundant small fossil root impressions were present in the fire-clay found with some of the seams. The general geological results of the expedition show that there is a very ancient series of crystalline rocks similar to those already described by Ferrar, of the *Discovery,* forming the foundation platform from near the South Pole to Cape North. The whole of this basal series gives every promise of minerals of the rare earths in more or less abundance. Superimposed upon these basal beds is the sandstone formation already described by Ferrar as the "Beacon" sandstone. Above the sandstones, on a series of volcanic rocks, occur immense lava sheets more or less horizontally bedded. As regards volcanic eruptions, it is interesting to note that Erebus, like Stromboli in the Mediterranean, formed a good barometer, for as the mercury fell in the barometers of the expedition, so did the steam cloud over Erebus rise higher and higher. Nearly all the principal steam eruptions took place when the barometer was at its lowest.

MR. WELLMAN'S PROJECT.—Mr. Wellman with his arctic airship, is again on his way to Spitzbergen, where, if the conditions are favourable, he will renew his efforts to reach the North Pole. It is reported that this time his airship will be dirigible and modelled after that invented by Count Zeppelin.

MR. BALDWIN'S PROPOSED ARCTIC EXPEDITION.—Mr. Evelyn B. Baldwin's announcement that he will undertake the organization of an expedition to cross the Arctic Ocean is having wide publicity at home and abroad and some of his new suggestions have been approved by polar travellers as likely to prove very practical and useful. He desires to enter the pack-ice to the northwest of Point Barrow, Alaska, as far north as possible in about 160° W. Long., which position would locate him more than 100 miles east of the besetment of the *Jeannette* and 60° east of the point where the *Fram* entered the pack ice. He proposes to place upon one of the large floes, near the edge of the pack, a large number of logs, casks of oil, emergency supplies and clothing, some portable houses, etc., not only as a means of protection in case the ship should be lost either by crushing, fire or explosion, but also as a direct means of conducting side expeditions along the course assumed by the ship in her drift.

This course, he argues, will, in general, be parallel with the courses of the *Jeannette* and the *Fram*, as, owing to the packed condition of the ice, the ship can not vary far either to starboard or port of the natural line of progression. He points to the generally straight-forward character of the drift of the two vessels mentioned and believes it evident that an expedition starting from the point designated would be carried northward very near to, if not immediately across, the pole and thence south between the east coast of Greenland and Spitzbergen.

With his large experience as a participant in two expeditions to Franz Josef Land and one to the north coast of Spitzbergen in the matter of gathering drift-timber, Baldwin's observations as to the uses to which logs or other forms of timber may be put are of importance. Their value for fuel and as material for repairing boats and building shelters is evident, but Mr. Baldwin also proposes to employ them to re-strengthen his ship as the cargo is removed, and, during the summer months, as a bed upon which to grow cress, mustard and such other garden truck as are known to flourish during periods of polar sunshine. He would carry with him a sufficient quantity of specially prepared soil and fertilizing material to be placed in the natural grooves which would be formed by placing the logs side by side, or in holes or troughs to be chiseled from the logs themselves. At the close of each summer the soil is to be replaced in sacks or other receptacles. By means of tubing running beneath the soil of the garden, currents of warm air may be employed to stimulate the growth of the plants, the oil from the casks supplying the necessary fuel. Glass and blanket material will be used as protection during cool weather.

A part of the supply of timber it is proposed to use as flooring spaces for the dogs and Siberian ponies, and for the construction of signal and observatory towers at considerable distances from the ship. Owing to the great amount of work to be done on both sides of the line of drift, Mr. Baldwin proposes to adhere to his method of using Siberian ponies and dogs conjointly which he successfully employed in Franz Josef Land in 1901-2. Lieut. Shackelton used ponies with brilliant success in his recent march toward the South Pole.

The slowness of the drift of the pack-ice (average rate, two miles a day), will permit expeditions of considerable duration to be undertaken. The lines of march of these side expeditions are to be marked at intervals with permanently established signal poles and small sub-stations, the relative positions of which will be noted from time to time. Soundings, marine collections, and scientific observations will thus be secured at many points throughout a wide belt of unexplored territory embracing more than 2,000,000 square miles and 2,000 miles across it.

In a recent address before the Aero Club of America, Mr. Baldwin said that he could also employ the dirigible and other balloons, as well as kites and aeroplanes to great advantage in connection with his plan. Having manufactured the gas for and successfully dispatched fifteen message-bearing balloons from Franz Josef Land in 1902, a number of which were afterwards found, he is confident that he can again accomplish good results in the same direction.

EDUCATIONAL.

REPRESENTATION OF LAND FORMS IN THE PHYSIOGRAPHY LABORATORY.—Prof. R. S. Tarr of Cornell University has published some of the simpler results of five years or more of experiment in devising methods of indoor field work in physiography (R. S. Tarr and O. D. von Engeln, *Journal of Geography,* Vol. VII, 1908, 73-85). Briefly, the method employed by these teachers has been to follow up the out-of-door field work by experiments in artificially-constructed land forms, worked upon by miniature agencies analogous to those at work in nature. This is done in the so-called wet laboratory, where work on erosion and deposition, volcanic action, glacial deposits, and mountain folding has been successfully carried on.

For work on erosion and deposition a simple basement laboratory with water supply was outfitted. In this room a tank 8 feet square and 16 inches deep containing a smaller tank 5½ feet square and 14 inches deep was built, the inner tank being capable of raising and tilting adjustments. Sand and clay of various consistencies, and hose with fine sprayers complete the outfit.

Contours are taught by graphically outlining successive levels of a simple land form in water, the student drawing each contour while marked out by a water line. Lessons in erosion and deposition are graphically presented and other physiographic phenomena made clear. The experimental work, partly for elementary and partly for advanced students in physiography, is correlated with studies of maps and models. L. M.

THE COURSE IN COMMERCE AT THE UNIVERSITY OF WISCONSIN.—This course, which was opened in 1900 (*Bull. Amer. Geog. Soc.,* 1904, 422-423) has had steady growth. There were 85 students the first year, 1900-1901, and 216 in the present year, 1908-9. Prof. W. A. Scott is Director of this course. Facilities are supplied for young men intending to enter business careers, especially in the fields of domestic and foreign commerce and banking, and branches of public employ like the consular service. The course consists of (a) fundamental courses, including physical geography as a basis for economic geography, as well as other natural sciences, mathematics, English, foreign languages, history, and economics; (b) professional studies, including business correspondence and forms of documents, accounting, auditing, salesmanship, advertising, credits, and collections, and the management of factories and other business concerns; (c) elective studies in related groups, like banking, transportation, accountancy, organization, insurance, corporation finance, manufacturing industries, agricultural problems, commercial law, the consular service, foreign commerce and other electives.

Among the partly or wholly geographic courses incidental to various portions of the work in commerce as required studies or free electives are (a) the systematic physical geography or physiography already mentioned, courses in regional geography of various units like the World, North America, and Wisconsin, and advanced physiography, all offered by the writer; (b) courses in meteorology and climatology offered by Mr. E. R. Miller of the U. S. Weather Bureau; (c) courses in economic geography of the World and of the United States, and in agricultural economics, etc., offered by Prof. H. C. Taylor; (d) courses in anthropology, races, etc., offered by Mr. C. H. Hawes; (e) courses in contemporary international politics, etc., by Prof. P. S. Reinsch, and (f) a synoptic course on the conservation of natural resources by President C. R. Van Hise. L. M.

VARIOUS.

GEOGRAPHICAL KALENDER FOR 1909.—This is the seventh issue of the Annual. Its editor, Dr. Hermann Haack and the house of Justus Perthes are to be congratulated on the fact that this work of reference is becoming more useful every year. The present issue contains 781 pp., in addition to a large number of geographical and other advertisements.

For several years, the Kalender has been introduced with a portrait and biography of some geographer of international reputation. American geographers will be glad to see that this compliment is now paid to Professor William M. Davis, of Harvard, the large results of whose studies and his formative influence upon geographical investigation and education are now widely recognized in Europe as well as in his own country. The publisher was fortunate in securing this sketch of Professor Davis's life work from the pen of Professor Albert P. Brigham, than whom no American writer is better qualified, both in a geographical and a literary sense, to prepare such an appreciation of eminent service rendered to geography. The paper is accompanied by an excellent portrait of Professor Davis and is printed both in English and in German.

Among the other contents are the "Geographische Chronik" (69 pp.), a record of important events during 1908, such as the completion of boundary surveys, meetings of scientific congresses, colonial progress, destructive storms, etc.; "Geographische Forschungsreisen des Jahres 1908," 52 pp.; "Geographische Literatur des Jahres 1908," 88 pp.; "Die Toten des Jahres 1908," 34 pp.; and the "Geographisches Adressbuch, A.," containing the names, addresses and position of many hundreds of geographers and specialists in related sciences. Seventeen maps in colours, showing new explorations, etc., illustrate the volume, together with a number of the black and white sketches of Bogoslof that appeared in Professor Jagger's paper in the *Bulletin* of this Society (August, 1908).